

WHAT IS CLAIMED IS:

1. A method for improving black print quality in a color printer having at least one color ink and black ink, comprising:

5 determining a location on a substrate where a black pixel is to be printed,  
printing a droplet of color ink at the location, and  
printing a droplet of black ink with the color droplet.

10 2. The method of claim 1, wherein the color printer includes cyan, magenta and yellow and wherein the step of printing a droplet of color ink comprises printing a droplet of one of cyan ink, magenta ink and yellow ink.

15 3. The method of claim 2, further comprising determining a plurality of locations on a substrate where a black pixel is to be printed;

15 printing a droplet of color ink at each of the locations, wherein cyan, magenta and yellow droplets are equally distributed among the plurality of locations; and  
printing a droplet of black ink with each droplet of color ink.

20 4. A method for improving black print quality in a color printer having at least one color ink and black ink, comprising:

selecting a fast print mode;  
providing an image to be printed on a substrate;  
determining locations within the image where black pixels are to be printed;  
printing a droplet of color ink at at least one of the black locations; and  
25 printing a droplet of black ink at each of the black locations.

5. The method of claim 4, wherein the color printer includes cyan, magenta and yellow and wherein the step of printing a droplet of color ink comprises printing a droplet of one of cyan ink, magenta ink and yellow ink at each of the black locations.

6. The method of claim 5, wherein the cyan, magenta and yellow droplets are equally distributed among the black locations.

7. The method of claim 5, further comprising:

5 using three mutually exclusive 33.3% bit patterns, one for each of cyan, magenta and yellow, to select which of cyan, magenta and yellow to print at each of the black locations.

8. The method of claim 5, further comprising:

10 using a stochastic halftone screen to select which of cyan, magenta and yellow to print at each of the black locations, wherein the upper 1/3 thresholds are used to select cyan, the middle 1/3 thresholds are used to select magenta and the lowest 1/3 thresholds are used to select yellow.

15 9. The method of claim 5, further comprising:

using three non-aligned halftone screens to select which of cyan, magenta and yellow to print at each of the black locations, using

$$K = \text{MIN}(C, M, Y)$$

$$C = C - K$$

$$M = M - K$$

$$Y = Y - K$$

$$C = C + (C\_PER*K)$$

$$M = M + (M\_PER*K)$$

$$Y = Y + (Y\_PER*K)$$

20 25 to generate CMYK to be halftoned by non-aligned screens, wherein  $\text{MIN}(C, M, Y)$  is the minimum of C, M and Y,  $C\_PER$  is the percentage of black to be printed with cyan droplets,  $M\_PER$  is the percentage of black to be printed with magenta droplets,  $Y\_PER$  is the percentage of black to be printed with yellow droplets.

10. The method of claim 5, further comprising determining the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black droplets by gray balancing.

5 11. The method of claim 5, further comprising adjusting the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black so as to minimize chromaticity in the black.

10 12. The method of claim 11, wherein the ratio of cyan droplets is approximately 31%, the ratio of magenta droplets is approximately 38% and the ratio of yellow droplets is approximately 31%.